THE ZOOLOGIST

No. 801.—March, 1908.

# SOME NOTES ON A HABIT OF THE GREAT SPOTTED WOODPECKER (*DENDROCOPUS MAJOR*) IN RELATION TO A SIMILAR BUT MORE DEVELOPED HABIT IN THE CALIFORNIAN WOODPECKER (*MELANERPES FORMICIVORUS*).

By Edmund Selous.

As is well known, a certain Woodpecker of North America—*Melanerpes formicivorus* to wit, known commonly as the Californian Woodpecker—has the habit, which, in view of its apparent uselessness, has been pronounced extraordinary, of studding certain trees with acorns by wedging them, in great numbers, into holes which it has previously made in the bark for their reception. The following notes (made in Sweden) on an analogous, but less irrational, habit of the Great Spotted Woodpecker (*Dendrocopus major*) may perhaps throw light on the origin and real meaning of the more peculiar one.

*April 23rd, 1907.*—To-day, on one of the islands of this lake, I was surprised to see, upon the stump of a felled Scotch fir-tree, at about a foot from the ground, a fir-cone set, apex upwards, in the bark, and so deeply that, had it been sliced off level with the surface, one-half of it would have remained where it was. Taking it off, I found that a groove in the thick bark of the Scotch fir had been made for its reception, which just fitted it, and, an inch or two higher on the same side of the trunk, was another cutting made evidently for the same purpose. At the base of the trunk, and on the same side of it, thirty-eight fir-cones belonging not to the Scotch fir but to the spruce—as did also the one imbedded—lay strewed in a half circle, the outlying cones on each side reaching, together, to about half-way round the tree, and, directly under the two grooves in the bark, was a litter of the dust and "leaves" of fir-cones. Looking amongst this, I found what, from previous experience, I knew to be the droppings of a Woodpecker (no doubt *Dendrocopus major*), and instantly thought of the Californian species which studs a tree-trunk with acorns, and, extremely interested in what looked like an earlier stage in the evolution of the habit, I concealed myself at some little distance from the stump in question, and waited in the somewhat forlorn hope that the Woodpecker, if it really were one, would return to its hoard. I sat on for some hours, but nothing broke the lifeless stillness of the island. Meanwhile, however, I had noticed another Scotch fir quite near me, at whose base lay a very much larger heap of cones—also of the spruce—and, upon going up to it, found that its bark had been treated in just the same way. Here there were three groovings, two of the same general shape as the others, and each of these held firmly almost any cone of the heap that I picked up, though one was a good deal longer than any of them—which, however, though it made the shape less exact, did not at all affect the firmness of the fit. The third mould was smaller and more rounded, and appeared to be adapted for a smaller cone. This, however, as I soon found, was a wrong conclusion, for a little later I came upon a tree from which a cone projected outwards, as well as upwards, in a very striking manner. But for the bizarre outline thus presented, which at once caught my eye, I should probably have passed this tree, as there were but few cones beneath it, and these only strewn about, not forming a heap. This was also the case with regard to a fourth tree, in which, like the first, a cone was similarly inserted in a socket which just fitted it. I cannot now remember whether there was another empty one, and if so whether it was rounded or elongate, but on going back to the tree in which I had first noticed the latter kind of groove, and trying a cone in it, after the fashion of the pro-

BRITISH MUSEUM

jecting one, I found that it took it exactly, so that quite the same appearance was presented.

A fifth tree was interesting in another manner, for here the depression in the trunk was natural, caused, I think, by a branch having once sprung there. It was larger than the other, nor was the shape nearly so true, more resembling that of an inverted peg-top. Nevertheless, a fir-cone had been inserted in it, in the same manner, whilst one or two others lay on the ground beneath, though here, as in the two preceding cases, there was no heap. In every case the tree was a Scotch fir—the bark of which gives special facilities for such carving—and the cones always of another kind, apparently those of the spruce. Under all, or nearly all, these trees I found the excrements of a Woodpecker, and at the large heap some of these were buried under the litter of the desiccated cones, giving the idea that the collection here had been a work of time, the refuse of the last-brought cones falling upon and covering that of the former ones, and, with it, the bird's excrements, which thus lay at different levels. The grooves for the reception of the cones in this tree—where I more particularly examined them—had the appearance of having been first cut with a knife, and then worn by friction, some being smoother than others. This smoothness, I think, must have been produced by the constant placing of successive cones in the groove. The cones presented all the appearance of having been hacked at with a hard, pointed implement, and the refuse, much of which was like sawdust, was also to be best explained in this way.

*April 24th.*—After breakfast rowed to another island—the nearest to the settlement—in order to examine the trees there. The results of my investigations were as follows:—

(1) A fair-sized Scotch fir had one deep engravure in the bark, of a shape differing very much from those I had found yesterday. The chief difference was that, taking those as the standard, it was upside down—that is to say, the part corresponding to the tip of the cone pointed downwards, and, in proportion with its breadth, it was shorter. On the ground lay cones of the tree itself, and some of these seemed to have been pecked into. On placing several in the mould with the apex downwards, I found that all were effectually secured in it, even

the smallest ones becoming so by pushing them down towards the narrow part. This was not, however, the case with a corresponding number of spruce-cones that I tried, for though they were larger than the largest of those of the Scotch fir that I could find, and filled the hole more completely than they did, still the fit was not so good, nor the cone so secure. Yet I could find no Scotch fir-cone which quite filled the mould. This cleft was at a greater height than any I had yet seen (an inch or two higher from the ground than the length of my walking-stick camp-stool, which would be about three feet). There was no heap of cones, nor did I find spruce-cones strewed with the others near the trunk, but had to fetch them.

(2) On another Scotch fir were three such niches, at different heights, of the same shape, but not so well made, and in the highest of these—the height of my chest from the ground—a small Scotch fir-cone, not more than one-third of the length of its niche, was squeezed tight and firm towards the narrower, downward-pointing end, with the apex up—*i. e.* against the shape of the frame. The other groovings were lower, but the lowest over two feet from the ground. No heap and no spruce-cones that I could see.

(3) Another Scotch fir had three large spruce-cones lying close to its trunk, with others some yards off, but all, it seemed, must have been brought. In the trunk of this tree, however, I could find no cleft. There was no heap. It is, however, possible that these cones had belonged to felled trees which had been removed, for there was a huge *débris* of shavings of the inner bark. Yet I could not make out that this had been the case. The fellings seemed to have been of Scotch firs.

(4) On another Scotch fir, at about the same height, there was a quite small and roughly-shaped cleft—not so deep—into which a correspondingly small cone of the tree stuck, when I placed it there, very well. No heap. One spruce-cone, which must have been brought, lay near the trunk, and this was well pecked, from the base to near the middle, on one side.

(5) A Scotch fir in which was a long, narrow grooving of a foot, or near that, in length, its base being nearly three feet from the ground. Here no attempt seemed to have been made to approximate the shape of the groove to that of a cone, yet a

cone of the tree, that I tried, stuck in it very well. We seem here to see the beginning, or, more probably, an early stage of the habit. Some inches below this long cleft was something that may have also been one, with more idea of shape, but very rude and rough. There was no heap and no transported cones.

(6) A more shapely cleft, about two feet from ground, but looked old. No heap, no transportations. Always the Scotch fir. Shape an oval. Could not distinguish apex from base.

(7) Ditto, but fresher, with pecked cones of the tree lying about. Apex down,* height from ground some two feet.

(8) Something that may have been a natural cleft, into which, judging by the pine-needles it contained, cones may have been placed. About same height from ground.

(9) A fairly well-shaped cleft, to take the average Scotch fir-cone. The apex down. Some cones of the tree, well-pecked, on ground, and one spruce-cone—apparently unpecked—that must have been brought, but was too large for the groove.

(10) A somewhat small niche. Shape approximating to oval but apex—if any—rather up than down.

(11) Ditto. Height from ground 2½ to 3 feet. Apex down but roughly shaped. No heap (as in all). Pecked cones of the tree—one pecked to pieces. No transported cones.

(12) A well-marked cutting, of the spruce-cone shape, the apex down. Underneath, but not quite in line with the cleft, and from six inches to a foot out from the trunk, a heap of the pecked or broken-out "leaves" of a spruce-cone, with other spruce-cones lying about that must, I think, have been brought. One of these seemed to have been pecked, but the others not, or only very slightly, at the base. Picking one to pieces I found it contained some small white grubs which would, no doubt, be palatable to a Woodpecker. I noticed here, just by the trunk, the excrement of a Woodpecker, which upon examination I found to contain what I took to be the hard parts of ants (but this, as will be seen farther on, was a mistake). Some cones of the tree itself—the Scotch fir, as in every case—seemed to have been pecked, but they were old, and it was difficult to tell.

---

* It would be easier for the bird to peck it out so, and this is no doubt the reason.

There were other examples of this interesting habit, but these must suffice. There was nothing in any of them quite like what I had seen on the other island, about a quarter of a mile off. In no case, there, could I see signs of the Scotch fir-cones having been eaten. Going again to this island, I could not find that any change had taken place in the disposition of the cones, &c., at the two principal depots, but with a view to testing this another time, I placed two, each in a groove, above the larger heap, to see if they would be moved, and rowed on to the next island, some ten or fifteen minutes away. Here, however, with the exception of some half a dozen quite small spruces, there were Scotch firs only, and accordingly I found no example of the cones of the former tree having been brought to them. All about I found trees marked in the way I have described—there is no need further to particularise—and in several of these cones were so tightly stuck that they offered a sharp resistance to being pulled out. They were at various heights, generally above two, and in one case nearly four, feet from the ground. No heaps. When the niche was not oval, or nearly oval, the apex or narrow end of it pointed down. The conditions on two other closely adjacent islands being the same, I did not land upon them.

Some days afterwards I found the two cones which had been placed by me in their niches exactly as I had left them. This, with various other indications, assures me that the present time of the year is not that at which the Woodpecker which makes these clefts and brings the cones to them occupies itself in this manner.

*May 2nd.*—Towards evening I rowed to the nearest island to get a specimen of these clefts made by Woodpeckers in the bark of the Scotch fir, with cones of the tree fixed in it. I found one, but also noticed another, in which a perfectly new-looking spruce-cone was fixed, projecting and upright—a most eye-catching object. How I can have missed it before, the island being small and thinly grown, I hardly know; but I have no reason to think that the birds are now at work in this way.

*May 5th.* — The other day I examined the Woodpecker's excrements which I had found on one of the islands, under the circumstances described, with a Codington lens. After some time, during which I was in doubt, I made it out to consist of minute fragments either of fir-cone or fir-wood, but, taking everything into consideration, I have no doubt the former. It was difficult, at first, to be sure, and, as I say, I was in doubt for some time. There were great numbers of little flakes, some entire, when they were of an oval shape, forming a cavity on one side, whilst others seemed to be chips and breakings of these, and were of various irregular shapes. The entire ones looked something like the shards of beetles, but minute examination never bore this out, but showed a woody grain in them. I compared the substance of these excrements with some of the small flakes and *débris* of the cones amongst which I had found them, and, though the latter showed lighter, the difference was no more than might have been accounted for by the one having been exposed to the digestive processes and passed through the intestines of a bird. I could not find one head, leg, or other recognizable portion of any insect. All was the woody material, and as the entire excrement was thus composed, and I examined half a dozen or so of them, we seem here to have a Woodpecker feeding entirely on fir-cones, having thus—for a certain time of the year, at least—exchanged an animal for a vegetable diet. The question arises whether these woody fragments were in all cases the seeds of the fir-cones, or portions of them. This is the theory, but I myself suspect that, from the seeds, the bird has come to feed upon the actual wood of the cone, and the desiccated and even powdered condition in which some of the cones, forming part of the large heap, were, goes to support this view.

During the following winter I was in Germany, and from towards the end of December, and through the greater part of January of the present year, I watched the Greater Spotted Woodpecker actually feeding in this manner, but here the cleft in which the cones were placed was high up in a small stump-like branch, denuded of bark, which rose upright from the centre where the trunk bifurcated. The tree, as in all the other instances, was a Scotch fir. This is just as described by Brehm's father (as quoted in Brehm's 'Thierleben'), who says that he only once saw such a hole in the *bark* of a Scotch fir (Kiefer) near to the ground, and adds that it was but little used. In the

'Natürgeschichte der Vögel Mitteleuropas' much the same account is given, but the cleft in the bark is spoken of as though it were resorted to somewhat oftener. In Sweden, if I may judge from these islands, and from some little heaps of cones near the trunks of trees which I have passed in the forests, without paying special attention to, the latter represents the common practice. In both the accounts I have mentioned the bird is described as going to the top of the tree in which its cleft is situated and bringing cones to it from there, but, for once that the one I watched did this, it must have flown half a dozen times and more into other trees for them—usually into one or other of two that were quite near, but sometimes into others a little way off. No mention is made in either work of the cones of the spruce, or any other fir tree, being placed in holes made in the Scotch fir. It is obvious that as long as the bird stayed on its own tree, so to speak, this latter interesting development could not arise, but, as soon as it flew into others, the long, fine cones of the spruce might offer greater attractions to it than the small ones of the Scotch fir. The latter, however, is the only tree of its kind which seems adapted for the making of these clefts.

From the above observations the evolution of this habit may perhaps be traced. It seems probable that, in the beginning, the bird kept to the higher parts of the tree, and, instead of making a niche, utilized one that it found. Brehm's father speaks of its hacking a hole on the upper side of a *split* (gespalteten) bough, and one of the clefts of the trunk in which I found a cone inserted was certainly a natural one. From this to improving any such accidental facility would be a short step, but from the top of the tree, where the bark either of trunk or bough presents no special facilities, to near the bottom, where it is thick and full of chinks, seems a long one, nor can I think of any intermediate halting-place, as long as the cones of the Scotch fir alone were the attraction. But once let those of the spruce be attacked, and their size, even if detached by the Woodpecker itself from the bough on which they hung, would present an obstacle to free transportation through the air. They would probably either fall at once to the ground, or gradually drag down the bird, who would then have to get them to its tree either by dragging them, or in repeated short flights at a low elevation. The tree reached, however, there would be no possibility* of getting them to the top of it, and the Woodpecker would have either to abandon its meal, to eat it on the ground, or to make a new niche near the base of the tree. In deciding on the latter course it would be urged by an already confirmed habit, which, however, would not prevent it making more or less use of the natural chinks of the bark, improving them by some additional grooving, and from this coming gradually to make a mould approximating somewhat to the actual shape of the cone. Of course, when the bird had once got, in this way, to the thick, chinkey, and comparatively soft bark, its advantages for being thus used would be apparent, and one would not expect it, for long, to carry large cones to one part of the same tree and small ones to another.

The object with which the Greater Spotted Woodpecker thus inserts fir-cones into niches which hold them is, of course, that he may the more conveniently peck down upon them, and thus extract their seeds. There is no question of storage—of providing food for the winter. The food is all about, and the bird feeds, in this way, from the middle of August, according to Brehm, to February or later. I last saw it doing so on January 19th. Therefore, the fact that the Californian Woodpecker—which inserts acorns into holes that it makes in the bark of a tree in much the same manner—does not do this in order to provide food for the winter, inasmuch as it migrates during that season, does not strike me as extraordinary. It does so—or, at any rate, I have little doubt that it once did—in order to eat them conveniently. The strength of the habit has, however, increased upon it, so that, instead of using each acorn, as it is placed, it yields to a feverish anxiety to place another and another—nor is it for any better reason, as I am convinced, through watching them, that many birds build several nests in quick succession. Most people have felt the difficulty of stopping from some trivial mechanical work which they may have occasion to do, but which there is no need for them to do all at once. However banal, the thing, if it be easy, is apt to become a pleasure, and there can be little doubt, I think, that the Californian Woodpecker experiences a strong and active pleasure in making his holes and inserting his acorns. As soon as he has finished one he feels, so I explain it, an impulse to begin another, and so on. I see nothing wonderful in this, but if, all the time, he were to be thinking of the coming winter, and how he would then enjoy the banquet he was now getting ready, I should think that wonderful. Never having been in America, I cannot, of course, say whether, or to what extent, the Californian Woodpecker now eats the acorns that he so busily studs the trees with ; but that he once did so—or something inside them—and that the habit commenced with this object seems pretty plain both from the analogy of our own European species, and also because it is difficult to imagine another origin for it. But let a thing be once done with *acharnement*, and, where the reason is not strong enough to prevent this it is always liable to be done for its own sake—for the mere pleasure of the doing, which may come, in time, to eclipse or obscure the object for which it was at first performed. With birds it has always seemed to me that this is particularly the case, and the true philosophy of many of their actions must, I believe, escape us, if this principle is not kept steadily in view. But why then does not the Greater Spotted Woodpecker leave fir-cones uneaten, or but little eaten, all over the trunks of trees? The strength, and consequent blindness, of an instinct bears probably some relation to the number of generations through which it has descended, and the one in question may have had a later origin in the one species than in the other; with our own bird, in fact, it may be still a habit only, and not a true instinct, for that the first does, in some cases, pass into the second, there can, I think, be little doubt.* Habit or instinct, the custom is certainly one which two or more Woodpeckers might very well have developed independently, and the fact that it is not common to the family as a whole is evidence that such has been the case. But does the European species show no traces of a disposition to follow in the footsteps of its American relative? I think myself that such traces can be detected. Some of the trees, for instance, which had been put to this purpose had not one niche only, but two or more close to each other. Moreover, the blindness of any instinct may show itself in various ways—for instance, where *Melanerpes* has come to place many acorns in as many holes, *Dendrocopus* may be getting to place an unnecessary number of cones, in accelerated succession, in one and the same hole. As to this, I noticed that many of the cones which the bird I watched had scattered about beneath its tree had been very slightly pecked, and also that though to fetch another cone was the inspiring motive of every little journey it made into trees near about, yet sometimes it would come back without one, as though the recollection of a cone left unfinished had suddenly crossed its mind. It would then go on pecking at the cone it had left, which, as a rule, was thrown out only when it returned with a fresh one. Many cones having just the size and appearance of those habitually chosen by the bird were intact, but I could not be perfectly sure that these did not lie as they had fallen themselves. This could not be the case, however, where transported cones of the spruce lay beneath a Scotch fir that the bird had worked upon, and a certain number of these showed no signs of having been pecked, which was, moreover, only slightly the case with some still sticking in the niches. These facts offer, perhaps, some slight evidence that something irrational or non-purposive may have begun to mingle with the habit or instinct, even in the European species. In conclusion, I would suggest that the best way of properly understanding very developed habits in one species is to study less developed ones, of a similar character, in another species.

---

* Or, at least it would be, I should think, very laborious.

---

* Or rather I had better say that I think it likely, myself, that habits are inherited. Is not the blind performance of what seems obviously by origin a habit some evidence of this? Why should a creature starting only from its own individual experience, and thus acting at first intelligently, become such an automaton?

I have mentioned the small—but by no means minute—white grubs which I found living within some of the cones. In these, instead of in the seeds, we may perhaps see the Woodpecker's original object in pecking open the cone. I found these, however, in the spruce- and not, as far as I recollect, in the Scotch fir-cones, and if they, or some other creature, do not inhabit the latter, this explanation will not serve. Yet it is unlikely that, when the cones of one fir are inhabited, those of another should not be.

# NOTES ON THE OTTER (*LUTRA VULGARIS*).

### BY W. PAYNE COLLIER.

FOR many years now I have taken a great interest in the doings of the Otter. Not only has this crafty animal given me much pleasure in following in its chase, but more since I found out it was of the greatest use towards the preservation of Salmon and Trout. This may seem to be somewhat conflicting, but the matter will be explained as my paper proceeds. Of course, every rule has its exception, and I will admit that under certain conditions some rivers would benefit by its absence, but these being the minority they must necessarily give place to the majority. Though I have watched the habits of the Otter to some extent, I know there is still much to be learned. But year by year this is becoming more difficult to carry out. None of our wild animals are more sensitive to the presence of the human being, and by the increase of anglers, which is so greatly in evidence, it becomes harder and harder to get within sight of them, the Annual Report issued by the Board of Agriculture and Fisheries showing that the increase in the Sale of Trout Licences alone is 56,871, per Government Report, 1905. What I have just said is only too well shown in the Otter having earned the name of "wily," and, to show its craftiness, it may be stated that when a trap, either of steel or wood, is set to catch them, it will generally be six weeks before they will again approach the spot on which it is placed, notwithstanding that it may be right in the middle of their regular path for years previously. I have mentioned anglers in the matter of the research, as no one is better placed to obtain information on the subject. Fly-fishers' movements are slow and silent, and therefore many more practical instances of the natural history affecting our rivers can be witnessed by them.

Until within the last few years it was supposed that Otters were only to be found in the solitude of the least inhabited portions of the country, but this theory has gradually exploded. All our rivers having short courses to the sea are frequented by them more or less at different seasons of the year, which has been proved by successful hunts which have been carried on, where only a few years ago their presence was unknown and unthought of. The Otter breeds in two different seasons of the year—spring and autumn—but whether the same animal breeds twice I am unable to say. Choosing some "holt," as its underground workings are called, well away from the haunts of man, they will make a nice comfortable nest of dry grass and other soft matter. Here they produce and bring up their young until old enough to forage for their own living. While they suckle the mother they render her powerless to leave any scent by which either hound or dog could trace her to her lair. When under the mother's care she is most attentive, watching over their welfare with as much motherly affection as will one of our own species with her firstborn, and in evidence of this I once saw a good illustration.

Fishing up the River Tamar, through the Duke of Bedford's beautiful domain called "Endsleigh," by Tavistock, in Devonshire, as I rounded a bend in the stream I suddenly "gazed" an Otter close to the edge of the water, trying to take hold with her mouth of what looked like a little lump of fur, but which wriggled and kicked to such an extent that she found some difficulty in attaining her object. In a moment, however, she seemed to be aware of my presence, though her back was towards me, and, making a final and successful grab, with a rush she took the water, and on landing on the far side at once disappeared in one of the many gutters with which these beautiful gardens are drained. Though her whole body was exposed to my view right across the river, she completely hid her cub.

In this same neighbourhood I also saw another instance of their affection. As I was about to leave the river, after wading up a "stickle," suddenly I saw a wave coming down the pool above me (all Devon rivers beyond navigation are pools and stickles), as though a large fish had jumped, but in a moment I saw two fair-sized cub Otters quickly swimming round and round in circles, as though looking for something, and at the same moment there rose about five yards above them a full-grown Otter, to which they hurried with great excitement, emitting as they swam a soft, low, whistling sound, no doubt of pleasure. This evidently was one of their parents. But the fun had not finished yet. On reaching its side they were fondly caressed, and then began a game something after what we in our childhood used to call "king of the castle." First one cub would creep on to the parent's back, only, however, to be pushed off by its mate, and *vice versa*—the large Otter now and again, when the game got too troublesome, sinking slowly under water, submerging the whole of the players. This continued for some few moments, when by a sudden slipping of my foot their notice was attracted, and before you could say *one* they had all disappeared; but by my experienced eye I hit the "chain" of the big one as it dived across the pool, and also that of the cubs—in much smaller globules, of course—as they made the nearer bank.

However, though so affectionate to its offspring in their early youth, as soon as they get old enough to take their own part in life their fondness seems to disappear, and both their father and mother become their bitterest enemies. Naturally a river, or portion of a river—and no doubt Otters have their own little kingdoms—will not supply above a certain amount of sustenance, and therefore, as soon as their young begin to want their fishy food, they are driven away to seek their living in fresh pastures.

Generally they go down stream, and continue, if the lower sections are occupied by other Otters, to the estuaries, where they live on Plaice, Dabs, and no doubt Conger, when they are in luck; and from evidence I possess are often taken for Seals, for they sometimes occupy the caves on the coast, as I found on examination in those under the bold headlands at Tintagel. Should a dog or bitch Otter meet with an untimely end, though even many miles from the mouth of a river, in a few weeks, or even sometimes days, the survivor will be joined by another of the sex required, and if the new-comer should have the bad luck to be killed before its comrade with which it has connected its fortunes, it will be found to be younger than the one previously despatched. From experience I should say that they are driven from home when about ten weeks old, as few have I seen killed or have been reported to me as having been met with between the age of mere cubs and that of youngsters of about eight or ten pounds. There are exceptions naturally, but these may have been allowed to remain through late maturing or illness.

The food of the Otter is supposed by many to be only fish, and that of the choicest kind; but this is a mistake, except in the case of Eels, which have been proved to be inveterate poachers of fish, particularly the spawn, and in these circumstances many of our rivers containing Salmon and Trout, or even coarse fish, would now be destitute of fish-life—or perhaps I had better say nearly so—had it not been for the Otter. Frogs inhabit the greater number of our rivers, and it has been proved they will devour more fish in the ova stage in a few moments than an Otter would kill in a year. Now, it has also been proved that there are no creatures of which Otters are fonder than Frogs, and for which they will travel many miles. From my own knowledge of the fact I could quote many instances, but one will answer the purpose of a dozen. Once early one morning I was passing through a wood standing on a hill to get some fishing on a river other than that I generally fished. As I approached the top of it I thought for a moment I saw a Fox creep across the path I was travelling, and at once the cry "Tally ho!" rose to my lips. But as the creature I had "gazed" came through the bushes out into the open space beyond, I saw it was an Otter. Immediately my curiosity was aroused as to what had brought it thus far from a river, nearly two miles, and on looking round saw there was a moderate-sized pond about fifty yards away. Going to the edge of the pool of water, I looked carefully round it, and within a few feet of me were the remains of a Frog, from which no doubt my approach had frightened it. This and other incidents seen by myself, and also those related to me by others, whose word was beyond doubt, have led me to know that where Frogs abound the Otter is the greatest protector the fish preservers can have.

And again, as I have said, Eels are desperate poachers, not only of ova but even of the fry of fish, and of the truth of this I have had many optical lessons. It was one of these which first brought to my knowledge what a friend Otters were to the angler.

While I sat one summer's afternoon over a large, clear, crystal pool, watching the fly-life float down—being at the time particularly interested in the matter of fly-tying—I suddenly heard a splash in the water near at hand, and looking down I saw an animal travelling up on the bottom of the river, which I at once knew to be an Otter. But what surprised me most—my first surprise was that it had not detected me before it took the water, knowing how keen they are—was that, instead of tackling several Trout which lay lazily in its path, it contented itself with turning up stone after stone with its snout in search of food of some kind, which it evidently hoped to find beneath them, as from several I saw it grab something, and then go on to the next. All at once, however, it made a great rush forward, and I saw it catch an Eel, which evidently had heard it coming and tried to slip away. The Eel was about a foot long, and with this it seemed content, for coming to the surface it began to go gently down the stream, but, catching sight of me, it again dived and hurried off under water at a pace it would seem almost impossible for it to attain. This instance, as I have already said, was my first authority for saying that Otters were the friends of the angler, *if kept, however, to a proper level,* and this has now been done nearly all over England by the institution of Otter hunts, which in themselves have increased wonderfully in the last ten years.

As to the size of the Otter, I believe twenty-nine pounds is the heaviest yet scaled, though of course there are unauthenticated reports of great weight; and as to their age, if the teeth are any guide, it may be assumed they live about as long as a Dog, but this is a matter on which I have no evidence.

However, if these brief notes do not explain the whole matter, still I hope they will throw some little light beyond that which has already been published on the history of what I have called, as an angler, "my friend the Otter."

# CAPTURES AND FIELD REPORT FOR NORTH DEVON FOR 1907.

By Bruce F. Cummings.

The following natural history notes on the occurrences of different species of animals in North Devon during the past twelve months, or so, are chiefly the result of my own observations made at different times, and also of the notes of other observers who have been kind enough to communicate them to me. I am especially indebted to Mr. H. H. Hamling for help and observations on the birds.

## Mammals.

Stoats and Weasels are very numerous here. During January, 1907, it is said that the keepers of Sir John Amory had nearly one thousand Stoats alone hung up on the keepers' trees. In spite of the large numbers of these vermin they do not appreciably diminish the quantity of Rabbits.

At the beginning of last year a large number of the Rabbits caught in North Devon were found to be affected with large hydatid cysts, caused by the first stage of a Tapeworm (*Tænia cœnurus*, Cobbold). In order that the worm may reach maturity and complete its metamorphosis, the Rabbit which it affects must be eaten by the Dog. One of these Rabbits which I examined showed, on being skinned, a large watery swelling on the rump, about the size of a plum. Inside were a number of round "white heads." These vesicles contained the microscopic embryos which are provided with a useful set of paired hooklets on the anterior side. The probable cause of this widespread malady was no doubt the very wet weather, which would favour the prolonged existence of the ejected ova until cropped up by some unfortunate nibbling Rabbit.

In May last year a Polecat (*Putorius fœtidus*) was reported to have been caught in a Rabbit-trap at Combemartin. I made inquiries, and have come to the conclusion that the report is correct. The specimen was not preserved. It seems that Mr. R. Adams found the animal, and he described it some time afterwards to Mr. W. H. Loosemore. Mr. Loosemore writes to me saying that the specimen was a male, two feet long from head to tip of tail, of a dark grey colour, white breast; tail about six inches, slightly bushy; it stood seven or eight inches high; and he remarks in conclusion:—"Mr. Adams says it was the size of three Ferrets." This is not very exact evidence, and it is a thousand pities that the animal was not preserved. Mr. Loosemore himself has seen three Polecats alive in the High Bray district, but not within recent years. The last specimen caught here was, I think, in the Taw Valley in 1887, by Messrs. J. D. Prickham and Williams ('Victoria County History'). A trustworthy Parracombe gamekeeper reported seeing a Pine Marten (*Mustela martes*) in the woods at Hunter's Inn a dozen years ago, but the last caught is in the possession of Mr. C. Bailey, of Ley Abbey. It was caught fifty years ago. A tenant of Mr. Bailey tells him that he caught another in the woods at Lee about forty-two years ago.

Four white Moles (*Talpa europæa*) have been captured: one at Arlington, two at Bishopstawton, and one at Swymbridge. Two more were reported captured at Combemartin.

On Jan. 28th this year the Hamburg-American liner 'Fuerst Bismarck,' when steaming at full speed near Corunna, was charged by a Whale. The Whale became disabled. On Feb. 2nd the captain of the steamer 'Peggio,' on arriving at Plymouth, reported sighting a dead Whale drifting towards the Bristol Channel. A little later the Whale was stranded at Hartland Point. The exact locality where it is now lying is on the rocks at Cow and Calf Point, near the Hartland Lighthouse. When the coastguardsmen first saw it floating on the water they thought it was a capsized yacht. The trouble is how to dispose of the Whale, as it is making its presence felt by its horrible effluvium. This Whale is evidently a Rorqual, and I believe it can be no other than the Common Rorqual (*Balænoptera musculus*), but I have not seen it. It measured in length over sixty feet, and was ten feet across the lobes of the tail; a male, with long and distinct throat-folds; the baleen was "over two feet long"; its colour was pure white underneath and black above; the flipper measured "over five feet." I am indebted to Mr. T. C. Burrow for most of this information, and several other sightseers have borne witness to its length, most of them saying that it was over seventy feet in length, which it very probably was. Hundreds of people from all parts have gone to see it. The rocks for many hundreds of yards are white with the fat rubbed off as it was washed along by the current before being stranded.

Dolphins and Porpoises are common. One of the latter was found sporting in the River Taw, only two miles below Barnstaple.

### BIRDS.

*Dec.* 27th, 1906.—This afternoon I saw a pair of Green Sandpipers on the Taw near Tawstock Woods. They occur here all through the winter months. The severe frost and fall of snow have sent into the valley numbers of Wild Geese. Wild Swans have also been seen in the estuary. A longshoreman got close to two Swans which were engaged in a fight. Five Swans were observed frequenting the Braunton Duck-ponds, and two were shot. They proved to be Whoopers (*Cygnus musicus*). Others, again, were seen in the marshes opposite the Barnstaple Town Station. A flock of fifteen were observed at Bude. I found seven Little Grebes in a flock on the river at Wrafton.

*Jan.* 1st, 1907.—I received a Golden-eye duck shot on the Taw.

18th.—A White-fronted Goose in a Barnstaple poulterer's shop-window. On inquiry I found that it had been shot at Bideford.

*Feb.* 7th.—Examined an immature Smew (*Mergus albellus*) shot on the Taw. Several Tufted Scaup on the Duck-ponds at Wrafton. Ever since the snow the Peewits have been in enormous numbers.

10th.—Watched a Dipper feeding. It flew out from the side of the river, and hovered over the water like a Kingfisher, and then it dived in. I waited for it to reappear, but it did not rise to the surface of the water like a Duck, but on reaching the bed of the river it must have got a hold on the little stones in spite of the current, and then walked along the bottom to the shore, where the first thing I noticed was its white breast. Later in the afternoon I saw this same bird swimming on the surface of the water. It concluded a very interesting performance by first hopping on to an overhanging bough; then, having turned himself round to face me, it began its beautiful song.

*March* 9th.—" An albino Linnet caught at Swymbridge" ('North Devon Herald').

*April* 1st.—The Ravens are nesting at Baggy Point. In the Rabbits' holes in the cliffs near Vention cottages several pairs of Stock-Pigeons are nesting.

*May* 8th. — A Tree-Creeper's nest behind the bark of a Mazzard tree. Nothing can be more fascinating than to watch the home affairs of these delicately built and confiding birds. The male feeds the female as she sits.

14th.—Dipper's nest on River Yeo, placed on flat top of a three-cornered buttress of a bridge over a waterfall. Three eggs in it. A couple of feet away a Grey Wagtail was feeding her young in a nest among the ivy of the bridge. Both species are very common breeding birds in North Devon.

18th.—In a field, among coarse sunburnt grass surrounding the Duck-ponds at the mouth of the Taw, was a Common Duck sitting on eight eggs. Nearer the water was another nest, which had evidently been marauded, as some eggs were broken, and others lying outside the nest. In the same field, in the middle of a clump of coarse grass, was a Teal's nest. The eggs were hidden by a screen of dry grass, for the old bird was not sitting. There were eight eggs. The Teal has not been recorded as a North Devon breeder hitherto, although it breeds on Slapton Ley, in South Devon. I noticed a Teal on the Wrafton Duck-ponds, which evidently had a nest not far away. The gamekeeper (J. Petherick) told me that he had seen the female Teal on this nest, and had flushed her from it several times. A Redstart on Braunton Burrows.

20th.—I watched a Peregrine Falcon sitting on three eggs for a greater part of the afternoon. The eyrie was situated in a cleft of rock half-way up an almost sheer piece of cliff. She could not be got to move, although we threw stones against the rock, hallooed, and, generally speaking, made a pretty frantic row amid the stillness of the Falcon's sanctuary. On a previous occasion she was found to be off the eggs; then, after screaming and flying in and out of the bay, she at length pitched on a pinnacle of rock near the eyrie, and afterwards flew into the cleft and walked on to the eggs. The pair of Lesser Black-backed Gulls are breeding in the middle of the Herring-Gull colony again this season at Baggy Point.

22nd.—I saw a great number of Curlews on Exmoor to-day. The majority appeared to be breeding. Also a large number of Black Grouse. The stronghold of the Grouse in these parts is Exmoor, but they are to be found in small numbers on all the commons and heaths neighbouring on the moors. They used to be seen plentifully on Codden Hill, near Barnstaple, but I believe they have been held to be extinct in that district for some years. It was therefore with some pleasure that I disturbed a Greyhen from among the heath on Codden Hill last winter. This spring Mr. Hamling struck across a Greyhen with a brood of youngsters, which could scarcely fly, on this same hill, near Bishopstawton. Evidently, then, one pair bred there this season. I noticed a Cirl-Bunting at Bratton Fleming.

25th.—A Sparrow-Hawk's nest in a poplar tree at Santon, containing five eggs, and lined with bark. Somebody removed these eggs to-day. However, by June 28th apparently the same pair of Hawks had utilized another nest in a poplar about three yards off. This nest was also lined with bark, and contained three eggs (hard sat), and with very little dark pigment on them. The old bird returned to her nest after a few minutes, first pitching on a twig near, and then bounding in handsome style on to the rim of the nest, when she slowly walked in and covered the eggs, leaving to view no more of her handsome form and bold colouring than a long barred tail which protruded over the edge of the nest.

25th.—A Burrow-duck sitting on six eggs in a round chamber seven feet down a Rabbit's burrow on Braunton Burrows. It is always an easy matter to find a Burrow-duck's nesting-hole by observing the scraps of down and footmarks at its entrance. Otherwise the great secretiveness of this bird with regard to the nesting-site shows a very perfected instinct. But the whole of her vigilant care is thrown away and at once counteracted by the leaving of down at the mouth of the hole.

*June* 5th.—By kind permission of Lady Chichester, of Arlington Court, I visited the heronry situated in the Arlington grounds.

It is one of our two small North Devon heronries. The nests are built on firs and other trees on an island in the middle of a lake. Three Buzzards were circling over this lake as I arrived. The Herons seemed alarmed, and replied to the cries of the Buzzards with dismal croaks. Of the dozen nests or so only three were being used. The young birds were well-grown and making themselves heard. The gamekeeper told me that twenty-five years ago the Herons were far more numerous. At that time they used to nest not only on the island but in the trees up the hillside. He also said that he had recently shot a "horned Owl" in the woods. I have seen the Long-eared Owl in fir-woods near Codden Hill, and I expect it is more or less common among our large tracts of larch and fir, though not often seen.

7th.—A Spotted Flycatcher nesting in Venn Bridge for the third consecutive year. Watched a male Stonechat violently chasing a small Tortoiseshell Butterfly.

8th.—A brood of little Burrow-ducks trotting at a big pace over Braunton Burrows towards the water. The parent showed great agitation. It was a very funny thing to watch this little crowd toddling over the sand. Here was the struggle for existence brought clearly before me in practical working order. Those that could not keep up were hustled by the stronger ones, and gradually left behind.

28th.—A white Lapwing shot at Braunton. A Red-backed Shrike feeding fledged young on Braunton Great Field. Saw a pair of Reed-Buntings on Braunton Marshes. They are exceptionally uncommon in the Barnstaple district. The Yellow Bunting is easily the commonest. Then comes the Cirl-Bunting which, though not common, is somewhat widely distributed; while the Corn-Bunting is very numerous, but local, as it is only found near the coast.

*August* 28th.—Considerable numbers of Sanderlings (*Calidris arenaria*) on the River Taw. They remained for about a week.

*October* 8th.—A Quail shot at Harberton, South Devon.

*January* 5th, 1908.—After some hard weather I saw a Grey Phalarope and three Bar-tailed Godwits on the mud-flats of the Taw.

10th.—While in some woods at Bideford with Mr. A. J. R. Roberts, we both noticed how common the Bullfinches were.

Coal-Tits, too, seemed far more plentiful than I have ever seen them at Barnstaple.

### Fishes.

Barnstaple is not a good centre for an ichthyologist. It is too far from the coast. Hence I feel sure that a large number of interesting captures escape me, especially those that occur at Clovelly, for example, which is almost as secluded and inaccessible as Lundy Island. I have not been able to do any dredging for myself.

On May 23rd, 1907, an Opah (*Lampris luna*) was discovered on the shore at Woolacombe Sands. Mr. R. Hadden, a visitor, noticed what he thought was a red flag standing in about a foot of water, but on approaching he saw that it was the dorsal fin of a dead or dying fish. He pulled it ashore, and it was taken to the railway station. On its way to the Royal Albert Memorial Museum at Exeter it was stopped at Barnstaple, where I saw it. Its length was 3 ft. 2 in., and it was said to weigh 140 lb. The colour of the flesh was yellow, and it was badly rubbed on one side; otherwise it still retained to a certain extent its glittering colours—red fins, round light spots, and sheens of purple and silver. Nothing was found in its stomach except a quantity of green slime. The last taken in Devon was, I think, in 1772, at Brixham; it weighed 140 lb., and measured as much as 4 ft. 5 in. long.

Numbers of Thickbacks (*Solea variegata*) in the Exeter market during May last year, taken on the south coast.

The Clovelly Mackerel fishing last season was considered worse than in the previous year. Their Herring season was very poor, as it was at all the fishing ports—Combemartin, Lynmouth, and Ilfracombe. This makes the third season in which the famous "Clovelly Herrings" have fallen off. A slight improvement, not maintained, set in during the early part of November, the boats averaging one hundred and twenty each, while one man secured a "mease" (six hundred and twelve). The fish taken were of very good quality.

The River Taw Salmon fishing was a very distinct improvement. About the beginning of last September some very fine catches of coarse fish—Bass, Mullet, and Flounders—were taken in the Taw. About this time there were shoals of small Grey

Mullet from one to three or four inches in the rock-pools and pools on the banks of the Taw. They disappeared later in the autumn. One shoal lived in a pit covered every day by the tide for about a fortnight. They were always to be found at low tide floating in this pool, with their snouts well above water, like half-submerged submarines, facing the mouth of a gully which was emptying itself into the pool.

A small Sunfish (*Orthagoriscus mola*) was captured this summer at Ilfracombe. The steamer 'Torrington,' which unloaded at Bideford on September 16th, had on board another Sunfish measuring roughly 4 ft. by 3 ft. 6 in. This fish had followed the vessel into the estuary. When off Greysands it got entangled in the anchor-chain, and was hauled aboard. I caught a Shanny (*Blennius pholis*) of a length of five inches. Numerous young ones in the pools on same date (Oct. 11th), but Montagu's Blenny has completely disappeared, though numerous last year. A gentleman, while prawning at Instow, caught a sleepy Sole of 3 lb. 6 oz.

On Oct. 17th a Porbeagle (*Lamna cornubica*) was captured at Ilfracombe, in the inner harbour. After providing an exciting chase to the fishermen it was landed, and found to be 7 ft. 5 in. in length, with a girth of 3 ft. 7½ in. The men had struck it with a gaff and an oar, but the latter snapped. The fish became disabled, and a noose was slipped round its tail, but it suddenly made a tremendous leap and got free, and swam for the inner harbour. Here it once again got free from a rope placed round the tail, but it eventually ran ashore on the beach. It was then lifted into a handcart, and a crowd quickly gathered to see the creature; when suddenly it opened its mouth quickly, and made a big lurch with its tail. The consequence was that the handcart upset, and the crowd, of course, fled in all directions! This was its last effort. A Whale-thresher (*Alopĕcias vulpes*) was caught at Plymouth this year, and it occurs fairly common on that coast. It is seldom seen on the north coast. One was taken at Ilfracombe many years ago, but has not occurred since. Congers have been in great force, specimens of 51 lb. and 60 lb. having been landed. They rarely get beyond this size with us.

The Horse-Mackerel (*Caranx trachurus*) occurs erratically, generally with any abnormally large shoals of ordinary Mackerel.

This was the case some few years ago, when *Caranx* was picked up commonly on the beach, where they had precipitated themselves.

Parnell's Goby (*Gobius parnelli*) is to be taken in the River Taw; the Spotted Goby (*G. minutus*) is, however, quite the commonest species on the sandy shores at Santon and Woolacombe.

Mr. W. H. Rogers wrote me on Nov. 4th: While fishing in the Taw, at Southmolton Road, for Dace, he caught two Roach (*Leuciscus rutilus*), one weighing 16 oz. and the other 13 oz. The Roach is an exceptionally rare fish in the Taw. I have taken it commonly in the Exeter Canal, and it is to be found at Slapton Ley, in the River Axe, and in the railway ponds at Exeter. The 'Victoria County History of Devon' states that the Perch (*Perca fluviatilis*) is common in Devon, but, as Mr. Rogers can testify, it is unknown in the Taw above Brightley Weir, and I have never heard of its being taken below. It is found in Venn Pool, but has probably been introduced there. Mr. Rogers has taken a few Gudgeon in the station pool at Lapford, and fewer still of the Loach. "Girt Jan Ridd," Blackmore tells us, captured a Loach of a quarter of a pound in Lowmans Water, Exmoor, but I have not succeeded in discovering whether this fish still lives in that river and in the Lyn, as it most assuredly did in former times.

Haddock (*Gadus æglefinus*) turned up at the beginning of this year in quite large numbers. They have not been known, except as comparatively rare visitants in Bideford Bay, for forty years past. Pollack, Power Cod, and Bib all in round numbers. In working the shore and in the rock-pools I have not yet come across the Fifteen-spined Stickleback (*Gasterosteus spinachia*), though I have taken it at Exmouth, in South Devon.

# THE BIRDS OF NORTH KENT: AUTUMN PASSENGERS.

By Thomas Hepburn.

To the observer of bird-life the early autumn has almost as many interests as the early spring. Summer visitors are departing, winter visitors are arriving, and there are also many birds to be seen which are only passers-by on the road from countries north to countries south. You may sometimes read about this time in the daily papers of enormous flights of waders and other birds passing over cities at night, being noticed and identified simply by their whistling notes and cries. And if you are of an imaginative turn of mind you may, perhaps, do as the writer did a short time back—stand in your back garden fancying to distinguish winged travellers innumerable flying far out of sight in the night by a subdued murmuring whistle—to be rudely awakened to the fact that the whistling proceeds from a neighbour's Ducks as they whisper to each other in their nocturnal search for worms.

But the unmistakable whistle of a Curlew flying overhead in the darkness of a September night which lies over the lights of a town is a reminder that these mysterious movements of travel, which waning summer and incipient autumn induce amongst bird-life year after year, have again commenced. Several times during the evening the same plaintive sound is heard, and at a late hour of the night there comes through the open window the subdued call-note and reply of a flock of the same birds resting in a field near the houses for a few hours before making a further move in their journey.

After many years of records from lightships and lighthouses, and of persevering observations carried on at various points along our coast, there is still almost as much mystery as ever, both as to motive and manner attached to these annual migrations; and the difficulty of solving the mystery is intensified by the fact that most of the actual movements take place at night. To the man who is an ornithologist, but most of whose time is tied to other matters, it is hardly possible to give that consecutive attention which is required to add further definite knowledge as to the how or the why of the movements of these bird travellers. But if he can find a day to spare during September or October he may at least manage to get a sight of some of the passengers, although he has to draw his bow at a venture, and to depend to a great extent on his good luck as to what species he may see.

The best part of England for observing these passages of birds seems to be the north or north-east coast of Norfolk, evidently because it lies close to the line of flight taken by many of the travellers who, if they meet with a check from adverse winds or any other cause, alight on the land nearest them, where the morning light reveals them to dwellers in the neighbourhood. But there are other parts where to a certain extent, though in a lesser degree, the same thing takes place, and one such spot is that part of the coast of Kent which borders the estuary of the Thames, more especially the easterly and most seaward portion of it. The place generally chosen by the writer is an exposed spit of land near the mouth of the Thames, whence you may look, if you are so inclined, right away to the hazy distances of the German Ocean. At this spot small parties of dallying travellers often stop for a day's rest before continuing their journey to the south. The flat meadow land stretches back to the rounded Kentish uplands. The last ricks of corn are being thatched. In places mysterious looking crops of plants grown for seed are still being harvested. And the newly thatched stacks standing in rows around every homestead appear to tell a tale of a good harvest having been garnered.

On the borders of the upland you have already come across a sign of autumn in a large flock of some two hundred Ringed Plovers (*Ægialitis hiaticola*) gathered on a fallow. By contrast with the brown of the soil the backs of these little birds look almost blue-grey. When they rise and fly their note and the black band across the white breasts distinguish them. The flight of a serried phalanx of small waders is a difficult thing to describe. The eye follows them, held by the momentary expectation of seeing them turn in the sunlight so as to show their white under sides, so dazzlingly white in the glare that the rest of the bird is unseen, and two hundred flakes of bright silver flash back the rays of the sun. There can be no doubt in your mind, as you watch them, that, whatever philosophers may say to the contrary, these birds are taking conscious pride and pleasure in the varied but accurate evolutions of their flight. These are travellers, for, although the bird nests in the neighbourhood, they are not resident in sufficient numbers to gather into such a large mob as this. It is, however, quite possible that this party may have now arrived at the end of their journey, and may be going to spend the winter months on the happy hunting-grounds of the mud-flats and saltings of the Thames and Medway.

There is more than one route by which you may find your way down to the beach, which is your destination. You choose that which leads you along the edge of a shallow tidal creek, now empty of water. With the embankment as a shelter, you are able to watch a stately and sedate gathering of some ten or a dozen Herons (*Ardea cinerea*), rather an unusually large number of these birds to be assembled together feeding in one spot. They soon sight you, and flap away upon their broad, loosely feathered wings. But there still remain on the ooze and short turf of the bank some less conspicuous birds—a number of Curlews (*Numenius arquata*) and Redshanks (*Totanus calidris*), and a few Peewits (*Vanellus vulgaris*), who, although alert and ready for departure, do not move, and after a moment's quiet return to their feeding. You notice among the Redshanks several waders which seem to differ from them. When you finally disturb the mob these birds separate from the others, and by their alarm-note, their dark upper plumage, and more especially by the striking patch of white tail-coverts, you distinguish them as Green Sandpipers (*Totanus ochropus*), birds that are on their way—possibly from the Arctic Circle—to the warmer skies of Africa.

Moving on to the river-wall, and viewing from its shelter the widening expanse of mud-flat laid bare by the falling tide, the whole of it, from the sandy beach to the distant breakers, is dotted with white flecks, which resolve themselves, through the glasses, into hundreds of Gulls, invariably with their beaks pointed to the quarter from which a strong boisterous wind is blowing. You recognize them by their size as being chiefly Black-headed Gulls (*Larus ridibundus*), now without their black —or to be more accurate, chocolate-coloured—faces. Amongst them, standing out conspicuously like so many giants, are several Great Black-backed Gulls (*L. marinus*), the black backs showing in striking contrast against the pure white breasts. Probably there are other species amongst these numbers, but they are too far off to be identified, although in several places there are groups of year-old birds in brown plumage of varying shade.

Your observation of the Gulls is suddenly broken by a sharp vibrating whistle, which might be syllabled as "terrett-terrett-terrett," quickly repeated, and you are just in time to catch sight of and identify some half-dozen Turnstones (*Strepsilas interpres*), flying from the sandy beach and winging their way over the ooze. As they pass along they disturb a small mob of Ringed Plovers, which join them in their hasty flight, and can be identified more by their plaintive whistle than by anything else. Very difficult they are to follow in their movements, the colour of their backs and upper wing surfaces being almost exactly similar to the light brown mud. The Turnstone is a passing visitor. Its plumage is striking, the upper parts of the adult being barred with black and white; but you were able to distinguish from the brown faces of these few birds that they were the young of this year.

And then you are surprised to hear close to you a "chittering" phrase, which carries you back in a moment to the rocky bed of the River Lune in Westmorland, where the same note was last heard—the first phrase of the wild little song uttered by the Sandpiper (*Totanus hypoleucus*), as with a twisting flight it flutters over the broken water and settles on some mossy foam-splashed rock, with a flirt and jerk of its tail, and a final shrill "cheap." An inconspicuous little bird of brown and white, it may have laid and hatched its four sandy-buff eggs close to the edge of that stream under a bush or tussock of grass, and is now, like its cousin the Turnstone, seeking change in the south.

Further on, in a little shingly bay of the clay cliff of the salting, you disturb a solitary Dotterel (*Eudromias morinellus*) on its way to Palestine or Egypt or North Africa, after having nested on some lonely mountain top in the remote Highlands, or possibly in the Lake District, under all the difficulties that come of too much notoriety. A handsome little Plover is the Dotterel, its head black with white touches, and the ash-brown of its back setting off the warm chestnut colour of its lower breast and flanks.

In a more distant part of the beach you happen upon one of those sights which warm the bird-lover's heart—some hundreds of Lesser Terns (*Sterna minuta*), a score of Common Terns (*S. fluviatilis*), a dozen or more Turnstones, and large numbers of Ringed Plovers and Dunlins (*Tringa alpina*), all sitting on a ridge of sand just above the wrack left by the tide. Careful manœuvring enables you to get a good view with the glasses without disturbing them. It is easy to distinguish the flecked plumage of the Lesser Terns of this year; amongst the Ringed Plovers the pale brown, broken, pectoral band marks out the youngsters of that species; and the Dunlins have still the dark patch on the lower breast which forms their summer decoration. The Turnstones run restlessly along the edge of the *débris* which marks the limit of the tide, and one, with a sidelong turn of its head, tips over a fairly large flat pebble with its beak in its search after insects or Crustacea. But a careless movement causes the whole mixed mob to rise in a cloud, filling the air with cries. The long drawn-out "scree" of the Common Tern, the chattering "skerrek" of the Lesser Tern, the sad, soft whistle of the Ringed Plover, the "purre" of the Dunlin, and the twittering whistle of the Turnstone, form a chorus of sounds which is music to the ears of the man lying half-hidden in the long grass, recalling as it does memories of the wild moorland, of pebble ridges with great waves of the ocean breaking on them, and of many a happy day spent without a care in the freshness and freedom of the open air.

A reply comes ringing from the sky in response to the babel on the beach—a shrill, whistling call, like "tetty-tetty-tetty"—and far overhead in the sky a string of small dots can be distinguished as a dozen birds, which we know from their note to be Whimbrel (*Numenius phœopus*); veritable travellers these, not to be turned from their purpose as they drive along on their journey to the summer days beyond the Equator. A shrill echo of their cry is heard close at hand, as a solitary straggler of the species rises from the salt-marsh, and with hurried wing-beat hastens in its attempt to overtake its comrades overhead. A "wisp" of a dozen birds flying swiftly past catches your eye as being in part strangers. Half of them you define quickly as Ringed Plover; the others, about the same size, you see to be a pale grey above, pure white underneath, with white tips to the secondaries, and blackish primaries. As the party settles in a little bay of fine sand it divides into two clusters, and by means of glasses you are able to add to your description of the strangers a black bill, and a shade of darkness around the eyes. They are without doubt Grey Phalaropes (*Phalaropus fulicarius*), already in winter plumage. This sight is already sufficient reward for your day's outing, because it adds a new record to your list of birds observed in the district.

You have had time to partly conceal yourself behind a sloping bank of sand, half overgrown with vegetation, whence you make notes on the disturbed parties of birds coming and going. Turnstones are present in somewhat larger numbers than usual. A flight of various small waders comes over a creek, headed by five or six comparatively large black and white birds, which pass quite close to you, so that you see clearly the piebald plumage and long bright red bill of the Oystercatcher (*Hæmatopus ostralegus*). With a shrill piping whistle they pass out of sight.

During a moment of quiet you find that there are two small birds running over the beach near the water, within ten paces of where you lie. A careless glance would dispose of them as Ringed Plover. But as they are so close, you look at them somewhat critically, and find that there is no continuous band of black across the chest, only small patches on each side. The young Ringed Plover of the first year has markings of somewhat the same description; it does not get a strong black band until the second year. But these birds have not the markings about the head of the young of the Ringed Plover, and their general sandy tinge of plumage determines them as being a pair of Kentish Plovers (*Ægialitis cantiana*), birds whose only remaining English nesting haunt is on the pebbly beaches of the south coast of Kent. Its presence here excites some speculation in your mind as to why it should have worked up north from its usual summer haunts.

The Lesser and Common Tern are fishing all the time along in front of you, and you can notice the brownish tints of the feathers of the young birds of the year of each species. But a scattered party of birds coming towards you over the water with a Tern-like flight arrests your attention at once, because their leader is black, and his followers are black and white. The one is a Black Tern (*Hydrochelidon nigra*) in mature plumage; the followers—although the disposition of the white and black of their plumage and a seeming difference in their style of flight brings the name of Sooty Tern (*Sterna fuliginosa*) to your mind—are probably young Black Terns of the year. The Black Tern used to nest in the Fen country years ago. It is said not to have done so for the last fifty years. Where, then, do these birds come from? For you have seen them before at the same time of the year.

You turn back across the marsh with a sense of satisfaction in the results of your day's outing. As you pass through the hedgerows of the upland the wind has dropped, and the day seems to be merging into a warm summer evening. Yet the clear piping song of a Robin in a cottage-garden is a certain sign that summer has gone.

# NOTES AND QUERIES.

## AVES.

**Variety of Great Titmouse.**—An interesting and beautiful variety of *Parus major* was procured in the neighbourhood of Tetbury on Feb. 6th last, and has been mounted by Mr. Jefferies of that town, at whose house I have been able to examine the specimen. A striking feature about this bird is that where yellow occurs in the typical plumage the coloration is almost normal, although the other markings are but faintly indicated. For example, in the ordinary bird the dark olive-green mantle contrasts distinctly with the much lighter yellow of the breast, but in the variety under notice the back (a faint yellowish green) is paler if anything than the under parts, which have retained their normal sulphur-yellow colour. The tail and wings are almost white, but there is a greyish tint on the former and on the lesser wing-coverts. The normal bluish black of the head and the streak down the centre of the breast are replaced by a delicate mouse-grey. Does the retention of yellow in this bird's plumage indicate that in *P. major* this colour is due to the structure of the feathers and not to a pigment? A Little Owl (*Athene noctua*) has also been sent to Mr. Jefferies. This bird seemingly met with a very peculiar ending, for it was found dead near Fairford on Feb. 20th, in the spout of a shepherd's water-cart. The bird had probably entered the narrow mouth of the spout during the night, and had been unable to escape.—COLLINGWOOD INGRAM (Long Newnton, Tetbury, Gloucestershire).

**Glossy Ibis in Aberdeenshire.**—During the harvest-time of 1907 an immature example of this species (*Plegadis falcinellus*) was shot in the mill-pond at Watermill, Fraserburgh, by Mr. Adam Brown. It is now in the possession of Dr. Galloway, Aberdeen. Since 1844 this is the fourth recorded occurrence of the species within our county.—GEORGE SIM (52, Castle Street. Aberdeen).

**Ptarmigan reported near Trondhjem, Norway.**—Probably several correspondents will call attention to what appears to be an obvious case of mistaken identity in the Rev. W. Serle's article on "Birds of

Graakallen Mountain, Norway" (*ante*, p. 67). From the entire context there can surely be no doubt that the *Lagopus* your correspondent found "abundant all over the mountain" was *L. albus* (Dal Rype), the Willow-Grouse, not *L. mutus* (Fjeld Rype, or Fjeld Skarv), the Ptarmigan. Perhaps the mistake arose from Mr. Serle hearing the birds spoken of by an English-speaking Norwegian as "Ptarmigans," as is so commonly done. Trondhjem can hardly be considered as in "North Norway," being very considerably less than half-way up the country.—ALFRED H. COCKS (Poynetts, Skirmett, near Henley-on-Thames).

**Little Auk captured Alive near Yarmouth.**—On Dec. 15th, 1907, a small black and white bird was observed by a lad on the beach. He threw a stone at it, and seeing it did not fly ran after it. Another lad joined in the pursuit, and an exciting chase ensued, the bird dodging the lads many times. It was at last captured by the former, who received a sharp nip on the hand with its mandibles. He took it home and placed it in an unused fowl's-run. It was fed on Sprats and pieces of Herring, on which it lived for five days. It was then brought to me, and proved to be a Little Auk (*Mergulus alle*). It was well advanced in its winter plumage, the white line of the occiput being almost completed. These markings I pointed out to Mr. Gurney in February, 1901, and were recorded in his Notes for Norfolk (Zool. 1902, p. 87). Up to the present time, as far as I am aware, this species has not yet been figured in its real winter plumage.—B. DYE (Row 60, Great Yarmouth).

**Wildfowl on Blagdon Reservoir, Somerset.**—Since writing the notes published in the last number of 'The Zoologist' (*ante*, p. 73) on the wildfowl which I noticed during a short visit to Blagdon Reservoir, I have received an interesting letter from Mr. Donald Carr, the keeper and ranger of the lake, and have also seen a list, drawn up by him, of the birds he has observed on and about the water. Mr. Carr writes that on Jan. 4th of this year the lake was shot over, and the following bag obtained:—Mallard, eleven; Teal, eight; Tufted Duck, sixteen; Pochard, eighteen; Wigeon, six; Golden-eye, four; Smew, one; Scaup Duck, one; Coot, sixty-nine. The letter continues:—"Tufted Duck and Pochard are always in evidence; they visit the lake in large numbers from autumn till spring. The Tufted Duck once nested here in 1906, but owing to an accident the nest was forsaken; the nest contained a clutch of ten eggs. The Teal are more in evidence during December; I have only known of one nest here. Wigeon also visit the lake during the winter in considerable numbers, but return to the north in spring. The Mallard and Shoveler are resident, and breed in abundance on the meadows around the lake. The Golden-eye visit the lake in considerable numbers, but are more erratic in their movements, as also are the Smew. I have only seen a few pairs of the latter on the lake this season." Mr. Carr has also noticed the White-fronted Goose, Scoter, and Garganey Teal upon the water, and states that the Sheld-Duck has once nested by the reservoir ; while among spring and autumn visitors he includes the Common and Black Terns. I consider that these notes contain interesting additions to our knowledge of the county avifauna.—F. L. Blathwayt (Lincoln).

## PISCES.

**Black Sea-Bream at Yarmouth.**—On Jan. 23rd my attention was accidentally drawn to a Sea-Bream thrown out with a number of common trawl-fish on a fried-fish shop slab. On pulling it out from the heap I was gratified to see a species hitherto unknown to me, and had no difficulty, on comparing it with the excellent plate in Day's 'British Fishes' (vol. i. p. 26, pl. 9), in deciding its identity as the Black Sea-Bream (*Cantharus lineatus*), or "Old Wife" of Couch. I had seen two or three Sea-Bream the previous day on another fish-slab, but being in a great hurry could not stay to examine them. I have since satisfied myself that they were of the same species ; they were of the same size, somewhere about fourteen inches in length. I made further inquiries with a view to finding out where they were taken, and my information, which was hardly satisfactory to myself, seemed to point to their having been caught by the trawl near Cromer Knowle, and as local boats have only just gone out to join the western fleet, I have some reason in suggesting that they were captured off the East Coast. I cannot, however, on such flimsy and unsatisfactory evidence include the species on my Norfolk list. The "Old Wife" has not yet, I believe, been recognized in local waters. The flesh of this species is stated to be soft and poor eating, at its best only in August and September ; yet, strangely enough, notwithstanding the local reluctance to experimenting on unusual species, these Sea-Bream were very smartly disposed of, and I considered myself fortunate in obtaining one for the Norwich Museum, whither I dispatched it.—Arthur H. Patterson (Ibis House, Great Yarmouth).

**Lesser Forkbeard at Yarmouth.**—My first find from the shrimpers, who, in spite of the inclement season, have started shrimping much earlier than usual, is a very small example of the Lesser Forkbeard

(*Raniceps trifurcus*), measuring barely 2½ in. in length. The little fellow was brought to me by a shrimp-lad, whom I had commissioned to bring some clear sea-water from outside in a big beer-bottle. The boy knew the fish as a "Toad-fish," a by no means inappropriate nickname, for it is a thick-set, blackish, ugly creature. I have before received examples of this species (*cf.* Zool. 1897, p. 554). — Arthur H. Patterson (Ibis House, Great Yarmouth).

## INSECTA.

**Introduced Orthoptera.**—The Orthoptera and Neuroptera are the least numerous of the principal orders of insects, but while the latter are fairly well represented in Britain, the poverty of our orthopterous fauna is quite astounding. In 1882 Brunner von Wattenwyl published his Prodromus of European Orthoptera, in which he enumerated four hundred and sixty-three species; but Mr. Malcolm Burr, in his useful little book on British Orthoptera, enumerates only fifty-three, of which at least seventeen must be regarded as either naturalized species or merely casual visitors, thus reducing the total of our actually indigenous species to less than forty. However, Orthoptera are hardy creatures, not always very particular about their food, and are easily carried from one country to another with merchandise, and consequently may be carried to and even naturalised in countries very distant from their original locality. Not only South European, but African, Oriental, and American species are frequently found in England, sometimes in houses in the heart of London, and sometimes in gardens, especially Kew Gardens. This applies specially to *Blattidæ* (Cockroaches), of which we have probably only three indigenous species, though the German, Oriental, American, and Australian Cockroach are all now thoroughly naturalized, and the Madeiran, Surinam, and Drummer Cockroaches are occasionally met with in single specimens. Two of the prettiest of these casual visitors are the bright green species of the genus *Panchlora*, which are often brought over among bananas, and a black species with yellow markings (*Dorylæa rhombifolia*), common in Africa and the East Indies, which has lately been taken in one or two places in London. Other interesting imported species are *Acridium ægyptium*, a very large Locust with transparent hind wings, marked with a broad curved black band, which is often brought with fruits and vegetables from the shores of the Mediterranean; a very curious brown Japanese Grasshopper, resembling a Cricket, with legs with very long spurs, and a long spine sticking out of each knee, and the hind wings banded with pale yellow (this was found in a house at Chelsea); and *Copiophora brevicornis*, a green insect not unlike our common Great Green Grasshopper, but with a long pointed snout like a triangular spear-head, and a long straight ovipositor twice as long as the body. It is a South American insect, but is sometimes found in England in botanic gardens.—W. F. Kirby (British Museum).

## NOTICES OF NEW BOOKS.

*A Monograph of the British Annelids. Polychæta* (Vol. II. pt. 1). *Nephthydidæ to Syllidæ.* By William Carmichael McIntosh, M.D. Edin., &c. Ray Society. 1908.

This beautiful monograph is a worthy example of the good work of Prof. McIntosh, and may be accepted as the type of what the Ray Society can and do publish. British Annelids are again enumerated and described by one who knows his subject and loves the work, and British zoology becomes a larger subject to many who scarcely realize, as they may from the gorgeous plates in this volume, that, in the words of the author, not a few—for example, in the *Phyllodocidæ*, *Hesionidæ*, and *Syllidæ*—are amongst the most beautifully ornamented invertebrates; "indeed, many vie with the gaudy tints of butterflies and birds, or the burnished splendour of beetles."

As regards classification, Prof. McIntosh is one who thinks for himself, and does not consider himself bound to follow the classificatory propositions of others. As he writes:—"The Polychæta, indeed, do not lend themselves readily to the systematist, and it is safer at present to place the families in series according to their natural and structural relationships, reserving further consideration of the subject for the summary." How many a monographer of other animals has acquired this experience! He often commences with a classification generally not his own, and finds it wither and perish as his work progresses; an alternative scheme is then too late, and he must struggle on in taxonomic shackles which he has not had the temerity to refuse to wear. It is often only when we have finished our monographic work that the dawn of a workable classificatory system arises.

The descriptions are ample, the synonymy extensive, and the distribution of the species fully recorded; the illustrations comprise eight coloured and fourteen uncoloured plates, with occasional figures in the text. We have thus a pleasant duty in bringing this publication to the attention of all shore naturalists, and we do so with a conviction that the result will soon appear in bionomical notes on the Polycheta in the pages of 'The Zoologist.'

---

*The Work of John Samuel Budgett, Balfour Student of the University of Cambridge.* Edited by J. Graham Kerr. Cambridge University Press.

The memory of John Samuel Budgett is one which Cambridge hath delighted to honour, and rightly so. A life of promise prematurely closed, a character which endeared its owner to many friends, combined with a love of real zoology which carried him more than once to the Tropics and eventually cost him his life, are features of a personality which could not fail to leave its mark. His principal achievement was the discovery of the life-history of *Polypterus senegalus.* As his biographer, Mr. A. E. Shipley, remarks:—"After years of patience, after three unsuccessful journeys into the heart of Africa, he had at last succeeded where all others had failed, and as he watched under the microscope the gradual unfolding of the ovum, the formation of the layers, the building up of the organs, he must have experienced a joy peculiar to men of science, and experienced by but few of them." Dr. Boulenger's testimony summarizes the whole business:—"Collectors of zoological specimens there are in plenty, but they are seldom in a position to make observations on the breeding habits of the lower vertebrates. Several attempts had been made with the object of procuring the developmental stages of the African fishes *Polypterus* and *Protopterus*, but in vain. Budgett determined not to rest until he had attained the long-sought prize; he succeeded, but for this success he paid with his life."

The volume contains an elaborate memoir by Mr. J. Graham Kerr on "The Development of *Polypterus senegalus*," and another by Mr. Richard Assheton on "The Development of *Gymnarchus niloticus*; Mr. Edward T. Browne writes on "The Freshwater Medusa *Limnocnida tanganicæ* discovered by Budgett in the River Niger," and Mr. Edward J. Bles on "Anuran Development." The various scientific papers of the deceased biologist are also reprinted, and a beautifully illustrated volume constitutes both a personal testimonial and a no mean contribution to biological science.

---

*A Guide to the Study of Australian Butterflies.* By W. J. Rainbow, F.L.S., &c. T. C. Lothian, Melbourne.

This book is an introduction to a knowledge of the Australian Rhopalocera, and is confined to those species "of which something is known of their life-history." It is therefore biological and bionomical so far as it goes, and "no previous knowledge on the part of the reader has been presupposed." As an introduction to a most interesting lepidopterous fauna, Mr. Rainbow has achieved success—he has created an interest in these butterflies, and in giving the life-histories of a number of species he has disclosed the method to be pursued in investigating those of the many species untouched in his volume. It is thus an incitement for future work beyond the mere accumulation and naming of species for cabinet adornment. Typical species of the principal families and subfamilies are well figured, and, what is more, many ova, larvæ, and pupæ.

As regards the terminology used, some criticism is allowable. Thus Mr. Rainbow prefers the generic name *Danaus* to that of *Danais*, but still retains the name *Danainæ* for the subfamily. As this is founded on *Danais*, one change must necessitate a constructive change in the other. Again in chap. v., devoted to the "Blues and Coppers," he has substituted the name *Lycinidæ* for *Lycænidæ*, but in previous pages and on five occasions he has referred to the family as *Lycænidæ*, a course likely to produce confusion in the mind of an inexperienced lepidopterist. We think also that the definitions of *protective resemblance* and *mimicry* are insufficiently illuminative. The first Mr. Rainbow considers as simply meaning "that an animal may resemble in colour or tint the bark or leaf on which it rests," and that this process is an *unconscious* one on the part of an insect; while by mimicry he understands "that an animal which in itself is either harmless or edible has *assumed* a close resemblance either in form or colour to those commonly regarded with fear or repugnance." We would rather regard the first as the least unconscious, and as disclosing an effort for concealment; while the second process is less to be realized by the term *assumed* than by the unconscious action of natural selection.

But these suggestions in no way depreciate the value of an excellent introduction to a knowledge of the Butterflies of Australia.

THE following have been elected by the Council of the British Association to be Presidents of Sections at the meeting of the Association to be held in Dublin in September next under the general presidency of Mr. FRANCIS DARWIN, F.R.S.:—Section C. (Geology): Prof. J. JOLY, F.R.S., Professor of Geology and Mineralogy in the University of Dublin. Section D. (Zoology): Dr. S. F. HARMER, Superintendent of the University Museum of Zoology, Cambridge. Section H. (Anthropology): Prof. W. RIDGEWAY, Professor of Archæology in Cambridge University.

BRITISH 2 AP 08 MUSEUM

West, Newman proc.

AMERICAN BLACK BRANT (*Bernicla nigricans*).